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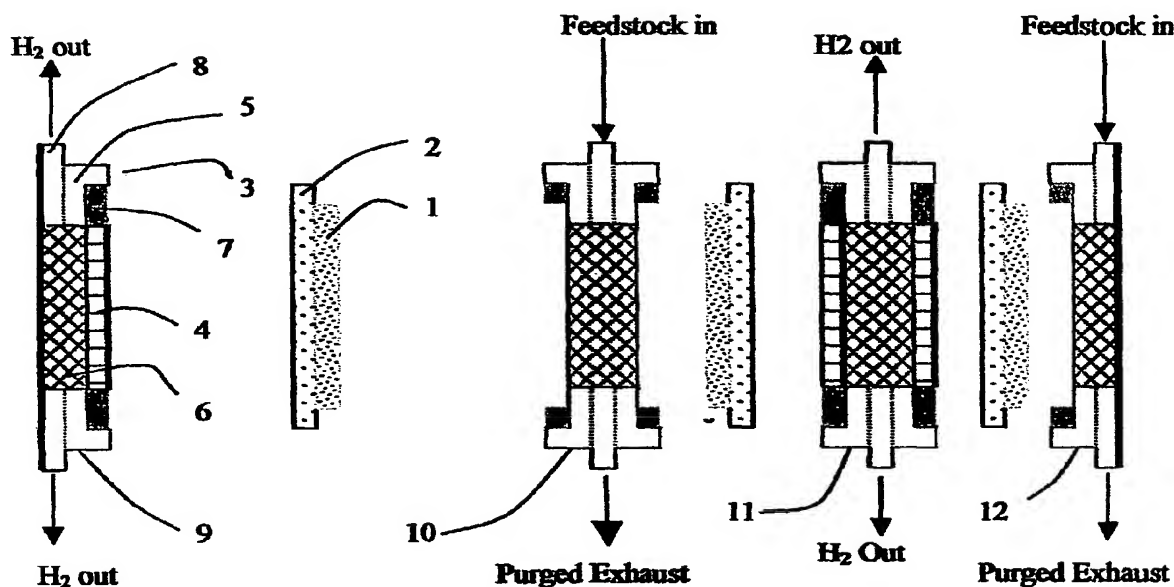
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(54) Title: SINGLE STAGE MEMBRANE REACTOR FOR HIGH PURITY HYDROGEN PRODUCTION



(57) Abstract: Hydrogen generating method and apparatus. The apparatus comprises a mixed phase protonic-electron conducting cermet membrane (2), wherein said membrane is coated with porous metal or composite catalyst (1) effective to decompose hydrocarbon and water reactants into a hydrogen-rich syngas at elevated temperature and pressure. The hydrogen ions are continuously withdrawn in situ by diffusing them through the mixed phase conducting cermet membrane (2) to the second membrane side where the hydrogen ions can be reconstituted into molecular hydrogen with a supply of electrons. The method favorably shifts the equilibrium of steam reforming and water gas shift reaction by use a single stage, high efficiency and high purity membrane reactor.

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